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appearance. The proportion of those who buy the book and actually read it, however, is decidedly smaller than in the case of the first mentioned book. It is a work which gives an excellent summary of the present state of botany as it exists in Germany, particularly, of the results of recent studies in the cryptogams, and, as such, is a valuable book of reference for the special student and professor. It is much too intricate and full of microscopic details to be easily intelligible to the general reader. It is by no means the case, as some suppose, that the average botanical student in Germany is in a condition to profit by Sachs' Lehrbuch. In many places, without previous study of the lower forms of vegetable life, the book is quite incomprehensible. The text and woodcuts are excellent.—W. G. F.

THE MOLLUSKS OF WESTERN NORTH AMERICA.*—Under this title Dr. Carpenter reprints the reports made by him to the British Association, with other papers, which will make the volume of much value to malacologists.

BOTANY.

WERE THE FRUITS MADE FOR MAN, OR DID MAN MAKE THE FRUITS?—These need not be taken as mutually exclusive propositions; for as "God helps those who help themselves," and man's work in this respect is mainly, if not wholly, in directing the course or tendency of Nature, so there is a just sense in which we may say "the art itself is Nature," by which the greatest triumphs of horticultural skill have been accomplished. Moreover I am not one of those naturalists who would have you believe that nothing which comes by degrees, and in the course of nature, is to be attributed to Divine power.

The answer I should give to the question, as we thus put it, is:

1. Some fruits were given to man as they are, and he has only gathered and consumed them. But these are all minor fruits, and such as have only lately come within the reach of civilized man, or are not thought worth his trouble. Huckleberries and cranberries, persimmons and papaws are examples, taken from this country. Whether even such fruits have or have not been under a course of improvement, irrespective of man, is another question.

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* Smithsonian Miscellaneous Collections, 252. Washington, Dec., 1872, 8 vo. pp. 325, 121.

2. Others have come to man full flavored, and nearly all that he has done has been to increase their size and abundance, or extend their season. Currants and gooseberries, raspberries and blackberries, chestnuts, and above all, strawberries, are of this class.

3. But most of the esteemed and important fruits, as well as the grains, have not so much been given to man as made by him. The gift outright was mainly plastic—raw material, time and opportunity. As to the cereal grains, it is only of the oat that we probably know the wild original; of wheat there has been an ingenious conjecture, partly, but insufficiently, confirmed by experiment; of the rest, no wild stock is known which is not most likely itself an escape from cultivation. Of some of them, such especially as maize, not only can no wild original be indicated, but in all probability none exists.

So of the staple fruits; of some the wild originals can be pretty well made out; of more, they are merely conjectural; of some they are quite unknown and perhaps long ago extinct.

To cite examples in confirmation or illustration of these points, to note how very ancient some of our varieties of common fruits are, and how very recent certain others—to consider how they have originated, with or without man's conscious agency, and how they have been perfected, diversified and preserved, mainly under man's direct care—would be to expand this note into an essay, and yet to say nothing with which pomologists are not familiar.

It would be curious to speculate as to what our pomology would have been if the civilization from which it, and we ourselves, have sprung had had its birthplace along the southern shores of our great lakes, the northern of the Gulf of Mexico, and the intervening Mississippi, instead of the Levant, Mesopotamia and the Nile, and our old world had been open to us as a new world less than four hundred years ago.

Seemingly, we should not have as great a variety of choice fruits as we have now, and they would mostly have been different, but probably neither scanty nor poor. In grapes, at least, we should have been gainers. Our five or six available species, of which we are now just beginning to know the capabilities, would have given us at least as many choice sorts and as wide a diversity as we now have of pears; while pears would be a recent acquisition, somewhat as our American grapes now are. Our apples would have been developed from *Pyrus coronaria:* and might have equalled anything we actually possess from *Pyrus Malus* in flavor, though perhaps not in variety, if it be true, as Karl Koch supposes, that the apples of the orchards are from three or four species. At least one of our wild hawthorns, *Cratœgus tomentosa*, in some varieties, bears a large and delicately flavored fruit, evidently capable of increase in size; it might have been in the front rank of pomaceous fruits. In a smaller way our service-berry would have been turned to good account. Our plums would have been the progeny of the *Chicasa*, the beach plum, and our wild red and yellow *Prunus Americana*, which have already shown great capacity for improvement; our cherries might have been as well flavored, but probably not as large as they now are. But instead of peaches and figs, we should be discussing manifold and most luscious varieties of persimmon and papaw, the former probably equal to the *kaki* just acquired from the far east. As to strawberries, gooseberries and currants, we should have lost nothing and gained something, as we possess several species besides the European types themselves; as to blackberries and raspberries we should have been better off than now, by the earlier development and diversification of our indigenous species. And we might have had all our finest strawberries a thousand or more years ago, these having come from our American types, *Fragaria Virginiana* with its varieties (which, as well as the old world *F. vesca*, occurs all across the continent), and *F. Chilensis* which ascends the Pacific coast to Oregon.

Then we should consider how much earlier our race, with an American birthplace, would have been in possession of tomatoes, of the pineapple, of the cherimoyer and the other custard apples, of the star-apples and other sapotaceous fruits, of chocolate, of Lima beans in all their varieties, of peanuts; not to speak of potatoes, sweet potatoes, and "Jerusalem" (that is, girasola or sunflower) artichokes: the last supplemented by our ground-nut (*Apios tuberosa*) would have been the first developed esculent tubers, and would probably have held their place in the first rank along with potatoes and sweet potatoes of later acquisition.

Among the causes and circumstances which have given to the fruits of temperate climates of the old world their preëminence, *opportunity* is one. How many potential fruits of value lie undeveloped in this country we know not, and now shall never know. They have lost their opportunity. Necessity, which is the mother of pomology as well as of other invention, has been fully supplied out of other accessible, and in some cases no doubt originally better, materials.

There are some, however, for which evidently "a good time is coming." Of these, our wild grapes are foremost. They have such a start already, and seedlings, whether from crosses or otherwise, can be produced and selected and reproduced in so short a space of time, that they will probably have achieved their position when the American Pomological Society holds its centennial celebration.

Blackberries, from *Rubus villosus*, are in similar case; and if due attention be paid to the low blackberry or dewberry, and to the sand blackberry of New Jersey and farther south, the foundation for a greater diversity of excellent sorts will be laid.

As to cranberries, already an important staple, increase of size and abundance of production are all that are to be expected. It is easier to bring about improvements in the direction of sweetness than in that of acidity. Huckleberries, also, have probably nearly reached their perfection unassisted.

A few wild fruits may be mentioned which manifestly have great capabilities, that may or may not be developed in the future. The leading instances in my mind are the persimmon and the papaw,—not the true papaw, of course, which we have in Florida, but the *Asimina* or western papaw, so called. Both persimmons and papaws are freely offering, from spontaneous seedlings, incipient choicer varieties to be selected from; both fruit when only a few years old, thereby accelerating the fixation of selected varieties into races; and both give fruits of types wholly distinct from any others we possess of temperate climates. He that has not tasted a *kaki* has no conception of the capabilities of the *Diospyros* genus. The custard apples of the West Indies give some idea of what might be made of our papaw, when ameliorated by cultivation and close selection from several generations. I have understood that one of the veteran pomologists of the country, Dr. Kirtland, of Ohio, a good while ago initiated a course of experiments upon the papaw in this regard; it would be well to know with what success, and whether the breeding and selection have been continued through successive generations.

Our American plums, already mentioned, have for many years been in some sort of cultivation, and have improved upon the wild forms; but I suppose they have not been systematically attended to. Their extreme liability to black-knot and other attacks renders them for the present unpromising.

Finally, if pomology includes nuts, there is a promising field uncultivated. Our wild chestnuts are sweeter than those of the old world; it would be well to try whether races might not be developed with the nuts as large as *marrons* or Spanish chestnuts, and without diminution of flavor. If we were not too easily satisfied with a mere choice among spontaneous hickory nuts, we might have much better and thinner shelled ones. Varying as they do excessively in the thickness of the shell and in the size and flavor of the kernel, they are inviting your attention, and promising to reward your care. The pecan is waiting to have the bitter matter between the shell and the kernel bred out; the butternuts and black walnuts to have their excess of oil turned into farinaceous and sugary matter, and their shells thinned and smoothed by continued good breeding; when they will much surpass the European walnut.

All this requires time, almost unlimited time; but it is not for those who are enjoying the fruits which it has taken thousands of years to perfect, to refrain from the good work which is to increase the enjoyments of far future generations.—ASA GRAY, *in Horticulturist.*

ZOOLOGY.

CAPTURE OF A GIGANTIC SQUID AT NEWFOUNDLAND.—We print the following letter from Mr. Murray, of the Canadian Geological Survey, kindly forwarded to us by Professor Agassiz shortly before his death:—

ST. JOHN, NEWFOUNDLAND, NOV. 10, 1873.

My Dear Sir:—The following account of a remarkable marine monster, which made its appearance off the shores of this island, and of a severed arm or tentacle of the same, now in my possession, will I dare say be interesting to you, and also to Prof. Agassiz, to whom I should like to offer it.

On or about the 25th of October last, while a man by the name of Theophilus Picot was engaged at his usual occupation of fishing, off the eastern end of Great Bell Island in Conception Bay, his attention was attracted to an object floating on the surface of the water, which at a distance he supposed to be a sail, or the *débris* of some wreck, but which proved upon nearer inspection to be endowed with life. Picot, on observing that the object was alive, to